

## Abstract

The aim of the invention is to determine the refractive index and/or compensation of the influence of the refractive index during interferometric length measurement with the aid of an interferometer (13, 13') impinged upon by at least two measuring beams ( $v_2$ ,  $v_3$ ) having at least defined frequencies with an approximately harmonic ratio. Interferometric phases are evaluated for the at least two measuring beams ( $v_2$ ,  $v_3$ ) at the outlet of said interferometer. The interferometric phases corresponding to the harmonic ratio of the frequencies of the measuring beams ( $v_2$ ,  $v_3$ ) are multiplied and at least one phase difference of the thus formed phase value is examined. According to the invention, at least one of the measuring beams ( $v_3$ ) can be modified in the frequency thereof and a control signal which is used to modify the frequency of the measuring beam ( $v_3$ ) which can be modified in the frequency thereof is formed from the obtained phase difference and the measuring signal controls the frequency in such a manner that the phase difference is zero. It is also possible to determine the refractive index or the length measurement by measuring a frequency difference.